NATIONAL TRANSPORTATION SAFETY BOARD
Office of Marine Safety
Washington, D.C. 20594

Operations Group Factual Report

Seastreak Wall Street allision with Pier 11, New York, NY

DCA 13 MM 005

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1. Accident

Vessel:	*Seastreak Wall Street* (IMO 8982010)
Date:	January 9, 2013
Time:	0840 (EDT)
Location:	Pier 11, New York, NY
Owner and Operator:	Seastreak LLC
Complement:	5 crew, 326 passengers

2. Operations Group

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Member – Port Authority of New York Representative
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3. Summary

About 0841 EST on January 9, 2013, the passenger ferry *Seastreak Wall Street*, operated by Seastreak, LLC, allided with the corner of the D2 slip while attempting moor at B slip of Pier 11 in Manhattan, New York. The ferry had departed Atlantic Highlands, New Jersey, approximately 40 minutes before the accident and was destined for Pier 11 to offload passengers. It was the second round trip of the day after an uneventful first run. Eighty-three of 326 passengers aboard sustained minor injuries, one passenger were seriously injured, and one of five crewmembers sustained minor injuries.

4. Details of Investigation

4.1 The Accident Transit

About 0800[1] on January 9, 2013, the 130.6-foot long domestic high-speed vessel[2] *Seastreak Wall Street*, operated by Seastreak LLC, departed Atlantic Highlands, New Jersey for its second regularly scheduled commuter trip to Manhattan piers on the East River in New York City, New York. On board were 5 crew members and 326 passengers. At the start of the voyage, the master gave a safety briefing to the passengers over the public address system on the location of the lifejackets and buoyant apparatuses. The ferry preceded out the Atlantic Highlands Municipal Marina, through Sandy Hook Bay, Chapel Hill Channel in the Lower Bay, beneath the Verrazano Narrows Bridge, Anchorage Channel in the Upper Bay, Buttermilk Channel between Governors Island and Brooklyn, and into the East River.

The *Seastreak Wall Street* is a twin–hulled small passenger vessel. It was originally constructed with water jet propulsion. In February 2012, the vessel underwent modifications to its main engines and propulsion arrangement. The four main engines were removed and replaced with two MTU-manufactured diesel engines. The water jets were replaced with controllable pitch propellers. New helm controls were installed at that time as well. The United States Coast Guard inspected the *Seastreak Wall Street* before it returned to service, and issued a temporary Certificate of Inspection (COI) on July 24, 2012.

Each roundtrip began at the Atlantic Highlands Municipal Marina in Central New Jersey, which is also where the Seastreak ferries were docked at night. The transit between Atlantic Highlands and Manhattan is about 20 miles and took about 40-45 minutes, with the *Seastreak Wall Street* traveling 29-32 knots. On the day of the accident, the pilothouse crew consisted of the usual crew complement of 1 Master and 1 Licensed Mate/OICNW.

The first roundtrip that day had been uneventful, with all systems performing normally. On the second trip, Automatic Identification System (AIS) shows that the speed of the vessel for the majority of the transit was 30 to 32.1 knots. When approaching the Verrazano Narrows Bridge in the vicinity of Swinburne Island, the vessel's speed was reduced below 30 knots. In an interview, the Master states that just north of the Verrazano Narrows Bridge he felt a slight vibration in the propeller. Using the propulsion backup system (altering pitch only) he altered the pitch of the starboard propeller which did not change the vibration, then altered the pitch of the port propeller which did increased the vibration, indicating that he may have *picked something up* such as a line or other debris on the port propeller *near the Verrazano* Narrows Bridge. [3] The Master stated he did not think the vibration would slow the vessel and AIS shows the vessel increased speed above 30 knots about 1.5 miles north of the bridge.

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[1] Unless otherwise noted, all times in this report are eastern daylight time (universal coordinated time – 4 hours) and are based on the 24-hour clock.

[2] The Coast Guard defines vessels such as the *Seastreak Wall Street*, non-International Code of Safety for High-Speed Craft (HSC Code) vessels that are capable of loaded service speeds of 30 knots or more and subject to Coast Guard inspection, as domestic high-speed vessels. U.S. Coast Guard, *Navigation and Vessel Inspection Circular* (NVIC) 5-01, *Guidance for Enhancing the Operational Safety of Domestic High-Speed Vessels*, Washington, D.C., U.S. Coast Guard, April 23, 2001

[3] Master, Seastreak Wall Street interview of January 15, 2013 pages 6-7 and 44.

According to statements from the Master, as the vessel approached Pier 11/Wall Street at about 500 yards, the Master at the centerline main console put the rudder to amidships and slowed the vessel's speed from 30 knots (17 yards per second) at full ahead and moved the throttles from ahead 100% pitch to 0% pitch; and the Mate got up to depart the pilothouse to go to his mooring station. The Master walked to the starboard bridge wing console, determined he had positive steering control and put the rudder to port full rudder to begin the turn to Pier 11/Slip B. The Master then pressed the "In Command" button in order to transfer control of the propulsion throttles from the centerline main console to the starboard bridge wing console. When he moved the port throttle to about astern 50% to slow the vessel's speed, but he immediately realized that the propulsion was not responding. The Master pressed the "In Command" button a second time and determined that he still did not have control of the throttles; the Licensed Mate/OICNW stopped and noted that the Master was having a problem and did not leave the bridge. The Master thought if he did not have control of the throttles at the starboard bridge wing console, then the center console must still be in control. The Master ran back to the centerline console and put both throttles in reverse but the vessel did not respond. The Master ran back to the starboard bridge wing console to try the throttles there, but ran out of time as the vessel allided with Pier 11/ Wall Street Slip D at 08:40:58 at a speed of 12.4 knots according to AIS records. Note: Slip B was the vessel's designated mooring area. Slip D next to and 54 yards offshore of Slip B. The Master stated that he kept his attention on the quickly approaching pier. He manipulated the throttles, but did not look down stating he would feel the vessel reacting by slowing down. He heard alarms, but did not look to see which alarms were going off. He did not look at the pitch indicators to see how many feet of pitch he had because when he put the throttles to 0%, he should have had zero feet of pitch and the vessel was slowing from 30 knots. The anchor was not let go to slow the vessel. No warning was passed on the PA system to the passengers and crew, and the emergency alarm was not activated.

Table 1: Accident Time Line[4]

DATE/TIME	EVENT
09-Jan-2013 Wednesday	
0500	Crew onboard; fuel & H20 100%; safety security checks; VHF 13, 14, 16 checks; weather clear, calm
0530	Master of *Seastreak Wall Street* requests by phone conversation to Master of *Seastreak New York* to shifts *Seastreak Wall Street* from fuel dock to passenger pier
0551	Master of *Seastreak Wall Street* onboard.
0600	Depart Atlantic Highlands, NJ Terminal with 265 Passengers
0639	Arrive Pier 11-Wall Street Terminal
0644	Depart Pier 11-Wall Street Terminal with 104 Passengers
0654	Arrive East 35th Street Terminal
0700	Depart East 35th Street Terminal with Passengers
0750	Arrive Atlantic Highlands, NJ Terminal

[4] per Seastreak Wall Street Bridge Log

0800	Depart Atlantic Highlands, NJ Terminal with 326 Passengers
0840:58	Accident Pier 11-Wall Street Terminal
0841	Both engines go off line
+3 minutes	Engineer goes to engine rooms to restart engines and transfer control to the bridge.
	Vessel is moored to Pier 11/Wall Street Slip B.
0845	First NYPD units arrive on scene[5]

4.2 Damages

The *Seastreak Wall Street* suffered damage to the hull, propellers, Servogear and Scana Mar. The total cost of repair was $166,196.[6]

Pier 11's Slip D is the dock barge *Desiree M*. The barge has a length of 108'-06" and a breadth of 35'-00". The barge suffered damage to its hull (an 8" diameter puncture of its hull and distorted deck in area of the point of impact), fender, screw jack, platform and gangway. The total cost of repair was $333,349.[7]

4.3 Toxicological Tests

Shortly after the accident, the *Seastreak Wall Street* crew submitted specimens to the Coast Guard for toxicological testing. All results were negative for alcohol and the five classes of illicit drugs that the U.S. Department of Transportation screens for in post-accident testing (marijuana, cocaine, opiates, amphetamines and phencyclidine).[8]

4.4 Vessel Data:

Vessel: *Seastreak Wall Street*
US VIN: 1145690
IMO: 8982010
Call Sign: WDE4030
Registry: US
Hailing Port: Atlantic Highlands, NJ
Owner: Citicapital Commercial Leasing Corporation
Managing Owner: Seastreak LLC
Operator: Seastreak LLC

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[5] NYPD *Investigate AIDEDS at Pier 11 Ferry Terminal* (FOUO) of January 9, 2013
[6] Seastreak spreadsheet *Repairs costs for Insurance submission* of January 16, 2013
[7] K-T Marine, Inc. letter *Dock Barge "Desiree M"* letters to Sea Streak, LLC of February 7, 2013 and April 12, 2013.
[8] In accordance with 46 CFR 4.06-3, post-accident alcohol testing must be conducted within 2 hours and drug testing within 32 hours of a serious marine accident, unless precluded by safety concerns directly related to the accident.

Builder: Gladding Hearn Shipyard, Somerset, MA
Keel Laid: 18-Nov-2002
Delivered: 30-Sep-2003
Repowered: Midship Marine, Harvey, LA
Reentered Service: 24-Jul-2012
Service: Inspected Passenger
Gross Tons (ITC): 417
Gross Registered Tons (GRT): 98
Length: 130.6'
Propulsion: Diesel Reduction
Vessel has 2 controllable pitch propellers and 2 rudders
Route: Lakes, Bays, and Sounds plus Limited Coastwise
Ahead Horse Power: 7,500
Class: Passenger Ship
Maximum Capacity: 499 PAX; 505 total persons (6 crew)

4.5 *Seastreak Wall Street* Bridge Navigational & Control Equipment[9]

- 2 Marine radio: VHF marine radio IC-M502
- 3 Raymarine Ray 420 Loud Hailer: public address system, fog signal
- 3 pair Scana port and starboard throttle control: port and starboard throttles, engine RPM, shaft RPM indicators, & propeller pitch % with associated push button panels:
    - Alarm panel: system failure, emergency clutch out, pitch act. Release, over load, engine local control
    - In command panel with load increase/reduce
    - Pitch panel, clutch panel load increase/decrease
    - Pitch
- 3 pair Engine stop & start buttons for port & starboard main engines
- 3 pair port/starboard rudder angle indicators
- 4 full follow up steering stations: Scana Mar-EL AS
- Non-Follow-up (NFUC): NFU Emergency steering; in command
- Window washer controls: Hedworth Marine International
- Magnetic compass
- 2 Furuno x-band (3cm) navigational radars with display
- Global Positioning System: Furuno
- Electronic Chart (Rosepoint)
- Automatic Identification System
- Trim Indicator: Humphree, speed, trim, list
- Windshield wiper washers controls: Hedworth Marine International
- 3 Search light joysticks: The Carlisle & Finch Co,

[9] Deck Operations Field Notes

- 3 Ship's horn push buttons

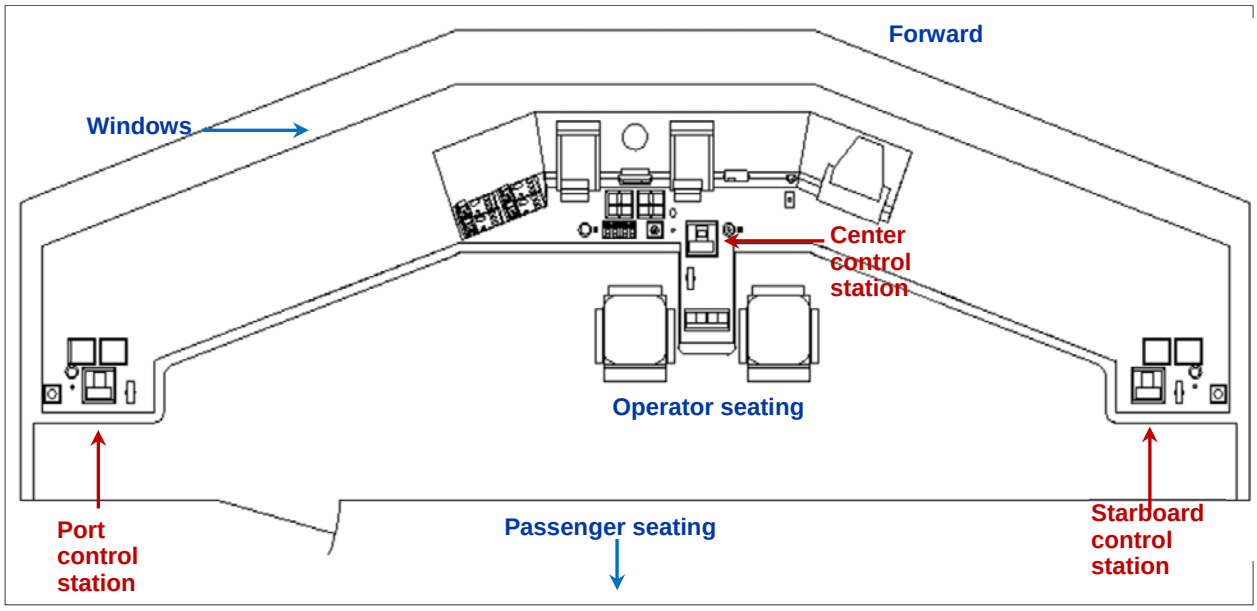

Figure 1: *Seastreak Wall Street* Bridge Diagram of Ship's Control Systems

The pilot house of the *Seastreak Wall Street* showing the arrangement of the 3 Scana throttle control panels, the 4 full follow up steering stations, and seating for the Master and the Mate.

4.6 Propulsion: Command transfer between bridge panels[10]

The vessel had 2 controllable pitch propellers (CPP) and 2 rudders. To control the pitch of the propulsion propellers, RPM of the main engines, and the clutch, the vessel's bridge was equipped with three Neptune Compact CPP propulsion control system maneuvering stations which had push-buttons, order levers, and indicators necessary for system control and status for throttle & pitch (primary & back-up). The two individual units critical to transfer command between bridge panels are:

- The 'Order Lever' or 'Maneuver Handle' – defined by the Scana User Manual as the Main unit for controlling the vessels propulsion. Controls the main engine RPM and the propeller pitch.
- The 'In Command' push-button with light for command transfer. Light in the button indicates that the panel is in service (only lit at one panel at a time)

According to the Scana User Manual, the procedure to transfer command between bridge panels are as follows:

[10] *Scana User Manual Neptune Compact CPP*, SEASTREAK 10554, SCANA MAR-EL AS and *Vessel Operating Manual Seastreak Wall Street*, SEASTREAK 11865, Seastreak, LLC.

1. *Press the 'In Command' push-button on the maneuver station where the command is wanted. The light in the 'In Command' push-button starts flashing indicating that a command transfer is in progress*
2. *Move the order lever to the same position as the one on the station in service.*
3. *When the two orders are equal the command is transferred. The light in the 'In Command' push-button change to steady on the new panel in service, and is switched off on the panel which was in service.*

Note that there is a timeout for the command transfer. When this is reached the light in the 'In Command' push-button stops flashing and is turned off. The procedure can be repeated as described above.

Since the command is only transferred at identical orders, the risk for making unwanted maneuvers is eliminated. The procedure for transferring the command is also very easy and quick to carry out.

The responsibility is transferred in the same way between all bridge panels. The lamp 'In Command' will only be lit on the panel that is in command, and only one panel can at any time be in command.

The vessel has a secondary propulsion control in which pitch could be controlled by pushing the 'Backup On' button then pushing the 'Pitch Astern' button which would increase the propeller pitch astern as long as the button is pushed. The vessel operating manual Vessel System section has an article in the sub-section Propulsion System's 7.2.1.20 CPP (Controllable Pitch Propeller) Back-up Pitch Control[11] which states:

As a complement to the main control system there is also a back-up system to be used if there is a failure in the main control system. The back-up system is electrically separated from the main system and has its own power supply. The back-up system is of a non-follow up type and controls the pitch of the propeller in the ahead or astern direction. Back-up controls are able to be operated at any of the command stations.

The vessel operating manual section Procedure Cards does not state to use CPP back-up pitch control in its procedure sections for Crash Stop/Breaking (PROC 24) or Loss of Propulsion PROC28).

The Master stated that the Back-up Control System was the emergency propulsion system in case the primary propulsion system fails, but later stated that he did not consider using the Back-up system to stop or slow the speed of impact because he did not believe there enough time or distance to engage the system to prevent or lessen the damage. Also, the Master did not push the engines' Emergency Stop buttons on the control console to kill the engines.

In an unrecorded interview with the company's Technical Manager, soon after the accident, the propulsion command transfer between bridge panels was tested and worked properly. The

[11] *Vessel Operating Manual Seastreak Wall Street*, page 43, SEASTREAK 11865, Seastreak, LLC.

loss of propulsion control between bridge panels could not be recreated after the accident. The Technical Manager stated that the "backup" mode is the emergency propulsion system to use when the primary propulsion system failed to slow the vessel.

4.7 Approach

As the vessel approached Pier 11/Wall Street at about 500 yards (0.25 mile) from the pier head, the Master at the centerline main console put the rudder to amidships and slowed the vessel's speed from 30 knots by slowly moved the throttles from ahead 100% pitch to 0% pitch. The Master stated that with a couple of knots of ebb current setting the vessel away from the pier, he needed speed to make his approach the pier. The Master stated that with 0% pitch, the vessel will coast/glide in its approach and he normally has transferred control to the bridge wing station when the vessel is 75 to 100 yards from the pier head. 30 knots is equal to almost 17 yards per second. The vessel's operating manual emergency procedure for Crash Stop/Braking states that by reversing the pitch throttles, "the vessel can maneuvered from full ahead to full astern in 3 seconds (less than 51 yards at an initial speed of 30 knots), but should only be used in emergencies as the high braking forces may cause injuries and material damage." The Master stated that there is a delay of about 7 seconds (about 119 yards at an initial speed of 30 knots) for changes in propulsion.

The vessel operating manual Arrival Procedure (PROC 05)[12] lists the following:

> *four engines clutched in; all back up switched off; change to hand steering; at designated and agreed position control is changed to "wing control"; external lighting control on; Kamewa (water jet) control to center position; navigation lights off; deck watch security patrol set.*

In the Managing Bridge Resources section[13] states:

> *At all times when underway the Captain is to man the bridge, and be contactable by radio and ship's telephone. In reduced visibility, ice conditions or at other times when necessary, additional qualified personnel is required on the bridge, as stated in Procedures 8 (restricted visibility), 9 (night operations), and 12 (wave height vs. speed considerations).*

An arrival announcement to Pier 11 was made, but no warning was passed to the passengers of the imminent hard landing. The vessel did not sound the danger signal on the ship's whistle before hitting the pier. The company's procedures do not have a section for emergency anchoring to stop the vessel.

4.8 Revised Vessel Operating Manual of February 4, 2013

[12] *Vessel Operating Manual Seastreak Wall Street*, page 69, SEASTREAK 11865, Seastreak, LLC.
[13] *Vessel Operating Manual Seastreak Wall Street*, page 18, SEASTREAK 11865, Seastreak, LLC.

After the accident, the company revised the vessel's Operating Manual on February 4, 2013 and includes in the Arrival Procedures to

> *Passenger arrival announcements made, verify steering control, at designated and agreed position propulsion control is to be verified 'in command' by the Captain.*

In the Managing Bridge Resources section the company added:

> *In addition to the Captain a Licensed Mate or Qualified Senior Deckhand will be posted on the bridge whenever the vessel is operating carrying passengers. Should it be necessary for the Mate or Senior Deckhand to leave the bridge while underway carrying passengers one of the following criteria must be met: 1. An emergency situation onboard requiring all hands on deck; 2. The speed of the vessel is reduced to displacement mode and there are no hazards to navigation present including traffic, ice, fog or reduced visibility; 3. The vessel is in approaching or disembarking a dock in displacement mode (8-12 knots) within 200 yards and transfer of the ship's propulsion control station has been confirmed "in Command" by the Captain. In reduced visibility, ice conditions or at other times when necessary, additional qualified personnel may be required on the bridge, as stated in procedures 8, 9, and 12. Displacement mode – Seastreak 43 meter vessel displacement speed: 8-12 knots.*

According to the company's revised Operating Procedures Manual, the Master has until 200 yards (0.1 mile) to the pier to confirm transfer of the ship's propulsion control station and the Mate could go to his line handing station; and the vessel's speed would be less than its displacement speed of 8-12 knots.

4.9 Other Ferry Operator's Safety Management System for Arrival Procedures

A high speed ferry operator in the Pacific Northwest[14] has a safety management system (SMS) for arrival procedures under Test Gear: *the Vessel should be slowed a considerable distance from the dock to release its pressure wake and give time to prepare the decks for tie-up.* The command transfer of helm and propulsion control from the center wheelhouse station to the bridgewing station is a two licensed officer operation where one licensed officer at the center wheelhouse station transfers control to the Master at the bridgewing station, after control is transferred, the Master confirms this by *checking of reversing and steering controls means confirming that the Vessel actually responds to the steering and reversing commands.*

At the Seastreak facility in Atlantic Highlands, NJ and the 35th Street Pier, the *Seastreak Wall Street* normally bow loads. At Pier 11, the Seastreak Wall Street normally loads starboard side to Slip B. Since the accident, *it has been reported that arrangement have been made with*

[14] **OUO** *Victoria Clipper IV Safety Management Manual,* pp. 101-107, SMS Level III, Volume 5, Clipper Navigation, Inc. of January 11, 2012 **OUO**.

NYDOT to facilitate bow loading of vessels, including the Seastreak Wall Street, at Captain's discretion[15].

4.10 Regulations

The vessel is inspected and certified by the U.S. Coast Guard according to 46 U.S. Code of Federal Regulations, Subchapter K §114 thru §122 - *Small Passenger Vessels Carrying More than 150 Passengers or with Overnight Accommodation for more than 49 Passengers.* The vessel was built to the R3 service restriction for the High Speed Light Craft Rules (HSLC) of the Norwegian classification society Det Norske Veritas (DNV). Note that the HSLC are different rules to the IMO High-Speed Craft (HSC) code (which forms part of the IMO rules for ships). The R3 service restrictions for the DNV HSLC are that the vessels is:

> *Limited to coastal operations and has a maximum distance from the nearest harbor or safe anchorage of 20 miles during the winter and 50 miles during the summer.*

The vessel was operating under a temporary Certificate of Inspection (COI) of July 24, 2012. A correct Certificate of Inspection also dated July 24, 2012 was provided[16]. The COI shows that the vessel has been inspected by the U.S. Coast Guard for manning, route permitted and conditions of operation, and safety exams of the hull, stability, tanks, lifesaving and firefighting equipment.

The COI manning requires 1 Licensed Mate/OICNW. 46 CFR §10.107 defines 'Mate' means a qualified officer in the deck department other than the master; and 33 CFR §157.03 defines 'Officer in charge of a navigational watch' (OICNW) means,

> *Any officer employed or engaged to be responsible for navigating or maneuvering the vessel and for maintaining a continuous vigilant watch during his or her periods of duty and following guidance set out by the master, international or national regulations, and company policies.*

Table 2: *The minimum crew shall be in accordance with the following* (COI) *table:*

PASSENGERS	MASTER	MATE	DECKHANDS
0-149	1	0	3
150-299	1	1	3
300-499	1	1	4

The corrected COI states:

> *When the upper deck is restricted from passenger access, the required number of deckhands may be reduced by one. The total number of passengers allowed is 400.*

[15] Kenny & Zonghetti LLC letter and annex *Seastreak Wall Street* of March 15, 2013.
[16] A corrected Certificate of Inspection for the period of July 24, 2012 to July 31, 2017, was received from the US Coast Guard on October 23, 2013.

On the day of the accident, the vessel was operating as a high speed commuter ferry with 326 passengers onboard. The upper deck was closed and there were three deckhands, a Mate and a Master.

4.11 USCG Operational Policy for domestic high-speed vessels

The U.S. Coast Guard has issued a number of NVIC as guidance to enhance the operational safety of domestic high-speed vessels that are not subject to the IMO HSC code.

The DNV High Speed Light Craft Rules and the IMO HSC Code have the same definition for a high speed craft: maximum speed equal or exceeding 3.7 x (Displacement corresponding to the design waterline)$^{\wedge 0.1667}$. The US Coast Guard originally defined a domestic high speed craft in 1999 as a vessel not built to the Code specifically those operating at speed is excess of 25 knots[17], and later changed the definition in 2001 to those vessels with loaded service speeds of 30 knots or more, not meeting the International Code of Safety for High-Speed Craft (HSC Code) [18]. The 30-knot threshold was recognized as a point at which vessel navigation becomes less routine and the risks associated with navigational safety becomes more apparent.

In 1991[19], to ensure the safe operation of high speed small passenger vessels not subject to the HSC Code, the USCG made recommendations for qualification for *Deckhands* and introduced the concept of a *Senior Deckhand* (assist the operator with bridge watch standing duties) when the OCMI allows the deletion of the required mate. In 1999[20] the USCG issued policy that vessels built to the international HSC Code on international voyages were to maintain HSC Code standards and made its interpretations on sections of the HSC Code left to the satisfaction of national maritime administrations. The USCG also provides policy guidance for additional measures and operating practices to the regional OCMI to apply to domestic high speed vessels not necessarily built to the HSC Code. The policy states, *the HSC Code provides more options for U.S. ship owners and builders of high-speed craft while achieving the goal of harmonization with international requirements.* Instead of adopting the HSC Code as the national code, it gives local discretion to the regional Officers in Charge, Marine Inspection (OCMI) for the safe operation of domestic high speed vessels in their waters. An enclosure gives examples of different OCMI requirements for domestic high speed vessels using the HSC Code as the guide for: restricted visibility, watchkeeping, engineering support, training, operations manuals, and sea state. The guidance for vessels subject to the international HSC Code have crew required for safe operation of the vessel shall be designated on the COI; and licensing, crew qualification, and training to be addressed in a separate policy by the National Maritime Center does not apply to domestic high speed vessels.

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[17] U.S. Coast Guard, *Navigation and Vessel Inspection Circular* (NVIC) 06-99 *Plan Review, Inspection, and Certification Guidance for Vessels Built to the International Code of Safety for High-Speed Craft and Additional Information regarding Non-Code High-Speed Vessels*, Washington, D.C., U.S. Coast Guard, June 8, 1999

[18] U.S. Coast Guard, *Navigation and Vessel Inspection Circular* (NVIC) 5-01, *Guidance for Enhancing the Operational Safety of Domestic High-Speed Vessels*, Washington, D.C., U.S. Coast Guard, April 23, 2001

[19] U.S. Coast Guard, *Navigation and Vessel Inspection Circular* (NVIC) 01-91 *Recommended Qualification for Small Passenger Vessel Deckhands*, Washington, D.C., U.S. Coast Guard, February 20, 1991

[20] U.S. Coast Guard, NVIC 06-99

Both polices were revised in 2003. Guidelines were added for the recommended qualification and training topics for *Deckhands* and introduced the concept of the *Qualified Deckhand – High Speed* with the recommended qualifications[21]; and additional guidance for enhancing the operational safety of Domestic High-Speed Vessels with the goal to produce a single document that covers operations, and manning for domestic high-speed vessel to which the HSC Code does not apply, by adding guidance for evaluating bridge manning of domestic high-speed vessels[22]. In particular, that an individual may act as both a Senior Deckhand and a Qualified Deckhand (high speed), but that these duties must not interfere with each other.

The COI states that the vessel operations and crew training shall be conducted in accordance with the high speed craft operations manual and training program marked approved by OCMI New York dated 25 October 2010. The 59-page undated Seastreak 12058 Crew Training Program for High Speed Ferries states

> *Once the Type-Rating training and booklet has been completed and signed by the candidate and Sr. Captain on the reverse of each competence sheet, the Sr. Captain will also sign the reverse of each competence sheet and the Sr. Captain / Marine Operations Manager Final Signature Sheet. The candidate will then receive a certificate which indicates that they have met the type rating performance standard. Copies of the final signature sheet will be retained in the employee's personnel file…Refresher training is to be administered annually…A copy of this documentation will be retained in the employee's personnel file.*

According to interviews with the Master and the Licensed Mate/OICNW, the Master operated the vessel and Licensed Mate/OICNW's duties were loading supplies onto the vessel, handling lines for mooring and unmooring, count passenger tickets, phone in the number of passengers onboard to the Seastreak main office, and acted as the lookout when in the pilothouse underway.

The USCG inspectors generally visit the vessels for annual inspections when passengers are not onboard so the crew can demonstrate emergency drills such as firefighting, man overboard, and abandon ship.

4.12Crew Information[23]

[21] U.S. Coast Guard, *Navigation and Vessel Inspection Circular* (NVIC) 01-91, Change-1 *Change to NVIC 1-91, Policy Guidance and Recommended Qualification for Small Passenger Vessel Deckhands*, Washington, D.C., U.S. Coast Guard, February 14, 2003

[22] U.S. Coast Guard, *Navigation and Vessel Inspection Circular* (NVIC) 5-01, Change 1, *Change to NVIC 05-01, Guidance for Enhancing the Operational Safety of Domestic High-Speed Vessels*, Washington, D.C., U.S. Coast Guard, February 14, 2003

[23] From crew interviews

Master, 36 years old; began working on party fishing boats at age 15 as deck hand; 1996 began working on Hydroline Ferry, company became Seastreak in 1998; deckhand, engineer 1996-2000; 2000 100 ton master license, began working as part time captain; 2001 full time captain.

Licensed Mate/OICNW, age 31; began working on party fishing boats at age 15 as deck hand; 2010 licensed 100 ton master near coastal; and radar observer certificate (two months prior to the accident); Mate is vessel's second-in-command. His initially described his position as the "Senior Deckhand/Mate". Senior Deckhand and Mate are different positions. Senior Deckhand is a company position and is in USCG policy for domestic high speed vessels, but is not listed on the COI. The COI notes that the vessel must be manned by a Licensed Mate/Officer-in-Charge of a Navigational Watch. In the interview, the Mate described his duties were to report passenger ticket count, lookout on the bridge underway, and his mooring station was to handle the bow line.

Deckhand #1 / Senior Deckhand, age 57; retired with 30 years as a teamster truck driver, 1973-76 Navy, 1977-78 MSC Ordinary Seaman on tanker, Able Seaman 1977, currently 1 year in the US Coast Guard Auxiliary; working for the company 1½ years; mooring duty is starboard wing station/ramp; 5 crew members increase to 6 during summer because of more passengers.

Deckhand #2 / Bartender, age 22; started working on party fishing boats at age 15 as deck hand; State of New Jersey Fire Fighter I, Volunteer Marine Unit Fire Fighter, New Jersey Boater's Safety Certificate for Recreational Craft; duty station underway is tending the bar.

Deckhand #3 / Engineer, age 41; citizen of Myanmar (Burma), entered US 5 months ago on an immigration visa; 8 years sea service in Myanmar merchant marine; working for the company for 3 months; Myanmar licensed chief engineer; Bachelor of Mechanical Engineering, Yangong Technical University; engineer/line handler duties: scheduled maintenance fluids, main engines, generators.

4.13 Company Personnel

Chairman Seastreak, age 78; Bachelor of Arts from Columbia University & Master of Business Administration from Harvard University; 4 years commissioned service in US Coast Guard Marine Safety; former CEO of US-flag Moore-McCormack Lines 1971-1987;

President Seastreak, age 48; Bachelor of Science in Marketing & an Executive Master of Business Administration; 23 years maritime management experience; 1987 Interlake HR manager and VP Marketing (13 years); shipbuilding at shipyard (4-5 yrs.); Ocean State New England Fast Ferry; 2008 purchased Seastreak; president since 2008-present; vessel operations entirely handled by Director of Operations, but President directed additional company safety policies above regulations such as company funded Radar Observer Unlimited for licensed operators, ferries have life rafts for 100% capacity, and have extra life jackets for children; safety issues are part of quarterly board meetings for 3 related shipping companies (Moran Towing, Interlake Steamship, and Seastreak) covering: crew injuries, customer injuries, and safety programs/issues.

Vice-President Operations (Director of Operations) Seastreak, age 38; began commercial seagoing career at age 11 on commercial passenger fishing boats; 1994 first issue of 100 ton master near coastal; 1996 began working as ferry captain for New York Waterway; 1999 began working at Seastreak; rose from deck hand to captain (three companies: Hydro Lines, Express Navigation and finally Seastreak); was Master of *Seastreak New York* during fire NTSB DCA-01-MM-056; report 02-04; Owns 49' commercial passenger fishing boat; licensed 100 ton Master near coastal – 4th issue; shore based Port Captain responsible for maintenance, safety, repair, manning, shore side operations (ticketing), crew scheduling; daily report to company president, vet new hires; 2 assistants: technical manager and an operations assistant.

Assistant Marine Operations Manager (Assistant Director of Operations) Seastreak, age 40; B.A. Psychology Rutgers University; 3years work as deck hand prior to working in the office; prior to working as a deck hand, he was a consultant for an employee benefits company; 5 years' work on charter boats; primary duty is assistant to Director of Operations; responsible for: pay roll, numbers for prior day, scheduling, website, errands, customer complaints, go-to-guy for whatever needs to be done.

4.14 Company Information[24]

Seastreak LLC operates a fleet of 4 high-speed catamaran passenger vessels offering daily fast passenger ferry service to Manhattan from Central New Jersey.

The company operates seasonal ferry service between New Bedford, Massachusetts and the ports of Oak Bluffs and Vineyard Haven on Martha's Vineyard with 2 high-speed catamaran ferries.

Seastreak is a corporation of 3 companies: Interlake Steamships, Moran Towing, and Seastreak; two families own the three companies and own/operate 9 Lakers, 105 tugs, 25 barges, and 7 passenger ferries.

4.15 Weather[25]

Clear weather, good visibility observed to be 6 miles, with winds from the northwest at 4 knots and air temperature about 42° F[26].

4.16 Waterway Information[27]

The fast commuter ferry transited from the Seastreak' s facility at Atlantic Highlands, New Jersey to Pier 11-Wall Street Ferry Terminal on Manhattan Island, New York took the vessel through New York Harbor: Sandy Hook Bay, Chapel Hill Channel, under the Verrazano-Narrows Bridge, The Narrows, Upper Bay, and the East River.

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[24] Seastreak Company Homepage downloaded http://www.seastreak.com

[25] Meteorological Analysis Report

[26] US Coast Sector New York SCC/VTS Memorandum of January 14, 2013; and CG-2692 of January 12, 2013.

[27] US Coast Pilot 2, Chapter 11 *New York Harbor and Approaches*, dated April 14, 2013, downloaded http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm

Maritime traffic consisted of several ferries on their morning routes bringing commuters to work. Pier 11-Wall Street Ferry Terminal is shared by several ferry operators bringing their passengers to Manhattan. The master noted that there was another vessel going around docking on the other side of Pier 11 and were no vessels on his side of the pier.

The East River, where the accident occurred, is a 14-mile-long tidal strait that connects Long Island Sound with New York Upper Bay and separates the western end of Long Island from the New York mainland. The Battery is noted for its strong tidal currents. Both sides of the East River, from The Battery to Port Morris, a distance of 9 miles, present an almost continuous line of wharves except where shoals or current prevent access.

4.17 Tidal Current[28]

According to the NOAA, National Ocean Service – Predicted Tidal Current table for the Brooklyn Bridge, about 0.3 miles away from Pier 11, slack water was at 0712 and maximum ebb current of 222˚ True at 4 knots, was at 1007. At 0841 at Pier 11, the Seastreak Wall Street would have experienced an ebbing current of approximately 2.0 knots. The master confirmed the current in the interview stating that current was ebbing at a couple of knots setting towards the submerge pier.

Table 3: Master, *Seastreak Wall Street* 72-hour Profile

DATE/TIME	EVENT
Sat 1/5/2013 – Day off	1000 Woke-up Hunting & hanging out with family 2245 Asleep
Sun 1/6/2013 – Day off	0515 Woke-up 0530 – 1500 Fishing 2100 TV / Sleep
Mon 1/7/2013 – Work day	0500 Woke-up 0530 – 2130 Work (short nap 1345) 2200 In bed
Tue 1/8/2013 – Work day	0505 Woke-up 0530 – 0945 Work 1045 – 1250 Nap 1430 – 2130 Work 2200 In bed
Wed 1/9/2013 – Work day	0520 Woke-up 0530 running late, he called the Master of the *Seastreak New York* to move the Seastreak Wall Street from fuel pier to passenger pier

[28] NOAA Tides and Currents, Tidal Current Tables, 2013 Tidal Current Predictions, New York, East River, *Brooklyn Bridge, 0.1 mile southwest of*, downloaded http://tidesandcurrents.noaa.gov/

	0540 Reported to work

4.18 Work Schedule

The COI states "when the vessel is away from the dock, or has passengers on board, or when passenger have access to the vessel for a period exceeding 12 hours in any 24 hour period, an alternate crew shall be provided."

The Master is on duty for 16-hours from 0530 to 2130, the 16-hour duty day is separated by the vessel's 5-hour layover from 0915 to 1415 at the secure East 35th Street Terminal[29] onboard the vessel, for a total of 11-hours of work during the 24 hour period[30]. However, cleaning, repairs, maintenance, and drills are conducted during this 5 hour crews rest period. There is no crew accommodation or shore bunk house for the crew to rest and the crew brings sleeping bags and portable cots to rest onboard the vessel's passenger seats or in the pilot house.

The Master's fixed work schedule was 2-days on, 2-days off, 3-days on, then 7-days off; or 5-days of work and 9-days of rest in a 14-day period. The accident occurred on the 3rd day of his 3-day on period before his 7-day break.

4.19 Mitigation of Fatigue Techniques

The four fatigues mitigation strategies[31] are: limit continuous wake time, utilize naps at work, maximize days off, and 2 night's recovery – prolonged sleep per week.

5. Additions to Deck OPS Factual Report

5.1 Previous Transfer of Control Incident

The captain told investigators that he had learned of another captain who experienced a difficulty transferring control to another station with the new equipment on the *Seastreak Wall Street* approximately a month after the modifications.

On August 29, 2013, a month after the Seastreak Wall Street was put into service with the new CPP, this other captain's second interview he stated that he was in command, alone on the bridge and making an approach to Pier 11. As he transferred steering and propulsion control from the center line main console to the starboard bridgewing control station. He stated that propulsion was at 40% pitch ahead when he transferred control.[32] The port propulsion control

[29] Landing Slot Licensing Agreement for Ferry Service License #L12-2 between The City of New York Department of Transportation and Seastreak LLC, signed on March 27, 2012.

[30] The vessel is regulated under Subchapter K-Small Passenger Vessels carrying more than 150 passengers or with overnight accommodations for more than 49 passengers. 46 CFR §116.710 *Overnight accommodations must be provided for all crew members if the vessel is operated more than 12 hours in a 24 hour period unless the crew is put ashore and the vessel is provided with a new crew.*

[31] Dinges, David F., lecture *Alertness and Performance*, course *Investigating Human Fatigue Factors (IM303),* November 21, 2013, NTSB Training Center Ashburn, VA.

[32] Capt. Gordon Young interview of January 15, 2013 transcript pg. 6

transferred, but the starboard propulsion control did not. He moved the starboard throttle in an attempt to match pitch to transfer control, but it still did not transfer control, he stated: "started getting a little uncomfortable getting too close to Pier 11, I may have been going a little too fast for the pickup. I'm not sure. At the time I wasn't sure, so what I did is I put the port in reverse and the boat started to slow and come to port." The captain aborted the approach and steered the vessel in a hard turn to port away from the pier.[33] As he made a complete round-turn, the starboard propulsion control transferred within a few seconds and he had full propulsion control from the starboard bridgewing console, and was able to make a new approach to Pier 11 without further incident.

The captain reported the incident to the company management. In the discussion with the captain, Seastreak management's assessment of the incident concluded that the captain did not give himself sufficient time to transfer control to the bridgewing, made his approach to the pier too fast, and didn't discover the loss of propulsion control soon enough.[34] The captain said he did not discuss the incident with anyone else and did not hear any more of the incident by Seastreak.

5.2 Practices of other Captains

Capt. Jason Reimer: stated that he transfers "zeroed out" steering amidships and 0% propulsion control about 500 yards from the pier head. After transferring steering and propulsion control, he would coast/glide in his approach to the slip and he normally has transferred control to the bridge wing station when the vessel is 75 to 100 years from the pier head.

Capt. Gordon Young 1st interview, employed with Seastreak for 18 years, all but two years as captain: begins slowing down, to 40% pitch ahead because it makes a smoother speed change, when coming out of the Buttermilk Chanel past Governor's Island, begins to transfer about 400 yards from pier head.[35] After incident, has his Chief Engineer on the bridge manning the main control station transfer control to him at the bridgewing control station.[36]

Capt. Donald Babbitt slows down to 30-40% pitch about four boat lengths from the pier head, and begins transfer when the vessel is two to three boat lengths away from the pier head.[37] Four boat lengths from the pier head – a half mile to a quarter mile from the pier head.[38]

5.3 Training Program Manual

The *Crew Training Program for High Speed Ferries SeaStreak, LLC* required by the COI dated September 29, 2008 as amended on October 25, 2010 to include the requirement for the vessel's operations and the training program manuals. Along with the updated operations

[33] Capt. Gordon Young interview of January 15, 2013 transcript pp 6-7
[34] Capt. Gordon Young interview of January 15, 2013 transcript pp 7-8
[35] Capt. Gordon Young interview of January 14, 2013 transcript pp 13-16
[36] Capt. Gordon Young interview of January 14, 2013 transcript pp 17-19
[37] Capt. Donald Babbitt interview of January 15, 2013 transcript pp 14-15
[38] Capt. Donald Babbitt interview of January 15, 2013 transcript pg. 26

manual, the training program manual was reapproved by the OCMI on February 4, 2013 on the vessel's corrected COI dated July 24, 2012.

The training program consists of 39 individual competencies divided into 13 units. Each individual competence was required to be signed by company's senior captain[39]. Applicable units of the company's training program that required demonstration to the instructor were: unit 1.2 operate propulsion systems (main engines through water jet) "from various bridge positions conforms to company procedure for normal and backup operation"; unit 1.6 operate internal communication arrangements and emergency communication arrangements "making announcement using PA system…operation of emergency communications equipment"; unit 2.2 implement & operate the failure mode of control, steering (including emergency steering) & propulsion systems "failure mode of control, steering (including emergency steering) & propulsion systems should be thoroughly tested through practical test engine failures at operational speed"; and unit 4.5 operate control panel and handover to wing stations and vice versa "in each mode (including an understanding the failure mode effect analysis for each of the control instrumentation)".

The Seastreak Wall Street's mate completed the company training programs for qualified captain, mate, senior deckhand matrix (annex 1) and was signed off by the company's senior captain.

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R. J. Furukawa
Group Chairman

[39] Capt. Jason Reimer